STATE OF ALASKA

Jay S. Hammond, Governor

Annual Performance Report for

INVENTORY AND CATALOGING INTERIOR ALASKA

by

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RESEARCH PROJECT SEGMENT

State: ALASKA Name: Sport Fish Investigations of Alaska

Project No.: F-9-8

Study No.: G-I Study Title: INVENTORY AND CATALOGING

Job No.: G-I-M Job Title: Inventory and Cataloging of the Sport Fish and Sport Fish Waters in Interior Alaska, Delta River Drainage

Period Covered: July 1, 1975 to June 30, 1976

ABSTRACT

Inventory and cataloging information from past lake and stream surveys is summarized for waters in the Delta River drainage. Surveys on new waters were conducted and some past surveys were updated.

Specific information is presented on 49 lakes and 6 streams.

Survey data include physical, chemical and biological information when available. Access status, angler usage, and recommended future management programs, where applicable, are also discussed.

RECOMMENDATIONS

1. Initiate inventory and cataloging of waters in the Fortymile River drainage in 1977-1978.

2. Complete inventory and cataloging of remote area waters in the Tok-Delta areas as time permits.

OBJECTIVES

1. To review and utilize existing data to direct further lake and stream investigations.

2. To determine the environmental characteristics and fish species composition of waters in the job area where this information is lacking.

3. To compile all available data on lake and stream surveys for the purpose of completing the Inventory and Cataloging requirements in the Delta River drainage.

TECHNIQUES USED

Graduated mesh monofilament gill nets 125' x 6' made from five panels with mesh sizes varying 1/2" to 2 1/2" bar measure were used to sample the fish populations in lakes. Depending on the size of lake, one or two nets were usually set overnight for a period near 24 hours. Shoreline seining was conducted in several lakes using a 50' x 6' bag seine with 1/4" mesh.

A Coffelt back-pack electroshocker (Model-BP-2) was used to sample fish in small streams. A boat mounted A.C. shocker powered by a Homelite 220 volt generator was utilized to capture fish in the Delta River. Sport fishing gear was also used in areas where other types of sampling was ineffective or impractical.

All fish captured were measured to fork length in inches.

Water analyses of water samples were conducted with a Hach (Model AL-36-WR) kit and lake depths were determined with a Lowrance echo sounder.

Surface acreages were determined with a modified acreage grid from 1:63,360 scale topographic maps.

INTRODUCTION

The Delta River drainage lies in the southcentral portion of Interior Alaska. It is bordered on the south by 62° 55' N latitude, on the north by 64° 05' latitude, on the east by 145° 25' W longitude and on the west by 146° 30' W longitude (Fig. 1). The total area includes about 3,000 square miles.

The drainage originates on the south side of the Alaska Range in the Tangle Lakes system and the Amphitheater Mountains. The Delta River flows in a northerly direction a distance of 80 miles before entering the Tanana River at Big Delta.

The upper watershed is characterized by rolling muskeg covered hills. Willow and alder border the lakes and streams. The middle portion of the drainage is mountainous type terrain with numerous streams most of which are glacial and swift flowing. The watershed in the lower drainage is predominantly rolling hills vegetated with mixed stands of spruce, birch and aspen at the lower elevations.

Two highways traverse the area. The Denali Highway, the original access route to Mt. McKinley National Park, leads west from Paxson and is hard surfaced the first 22 miles to Tangle Lakes. Most of the lakes in the Delta River drainage which presently support indigenous fish populations

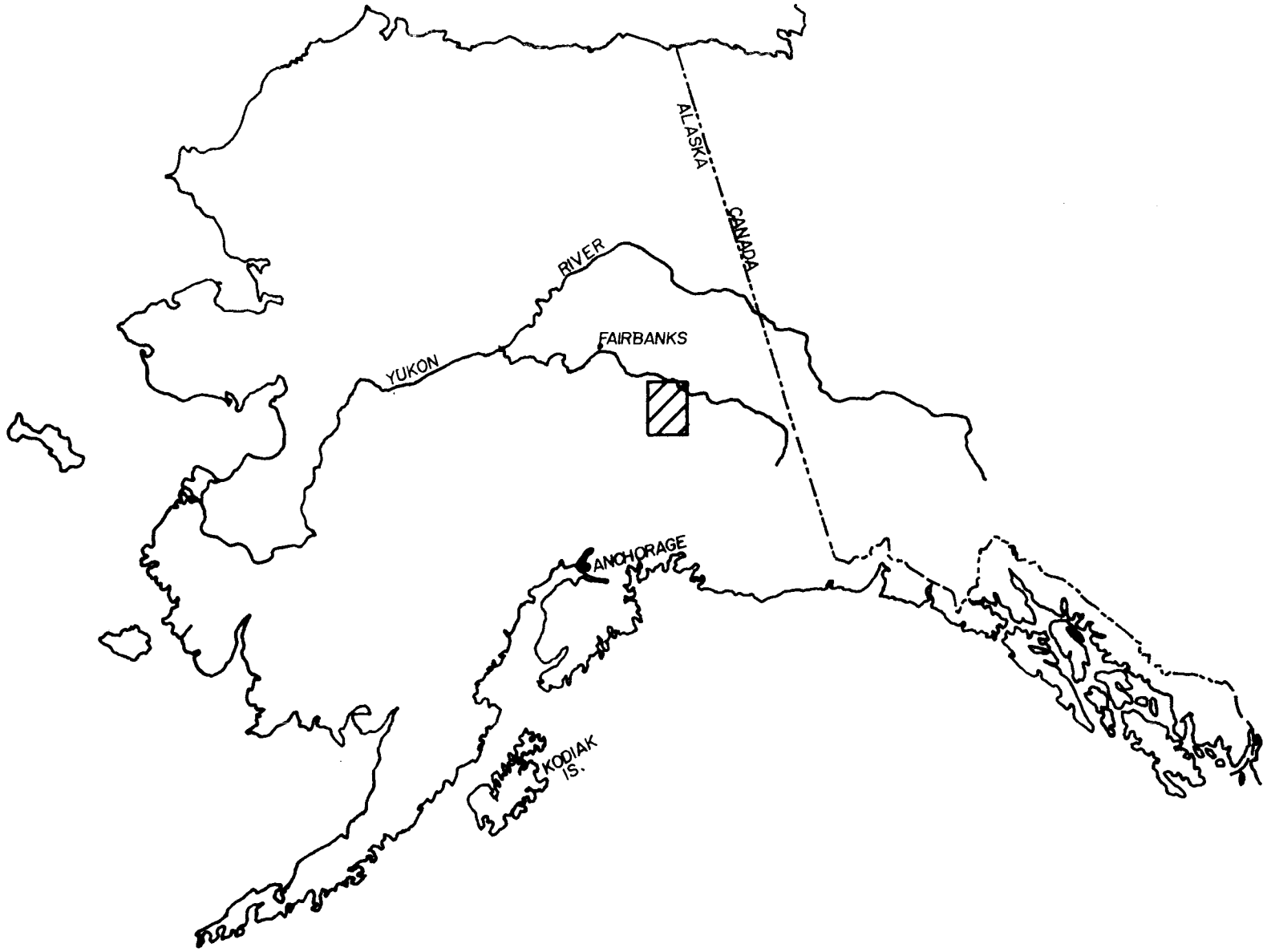

FIGURE 1: LOCATION OF DELTA RIVER DRAINAGE

with high recreational value are adjacent to or near the Denali Highway. The Richardson Highway parallels the Delta River along much of its length to its confluence with the Tanana River at Big Delta.

Fish species which have been identified from waters within the area and name abbreviations include: lake trout (LT), Salvelinus namaycush (Walbaum), Arctic grayling (GR), Thymallus arcticus (Pallas), round whitefish (RWF), Prosopium cylindraceum (Pallas), burbot (BB), Lota lota (Linnaeus), northern pike (NP), Esox lucius Linnaeus, longnose suckers (S), Catostomus catostomus (Forster), slimy sculpin (SSC), Cottus cognatus, Dolly Varden (DV), Salvelinus malma (Walbaum), chum salmon (CS), Oncorhynchus keta (Walbaum), and lake chub (CH), Couesius plumbeus Agassiz. Introduced species include rainbow trout (RT), Salmo gairdneri Richardson, and silver salmon (SS), Oncorhynchus kisutch (Walbaum).

Sport fish utilization is heaviest on waters in the upper Delta River drainage with lake trout, grayling and burbot being the species comprising the harvest. Due to good access to many of the waters, close monitoring of the fisheries is necessary to prevent possible overexploitation.

Stocked lakes near Delta Junction and Ft. Greely provide a considerable amount of sport fishing recreation to residents of the area as well as visitors. Several lakes located on Ft. Greely Military Reservation have been chemically rehabilitated and restocked and many others west of the Delta River have potential for similar management if it is considered desirable in the future.

FINDINGS

Lake Surveys of Waters in the Denali Highway and Isabel Pass Area

The following lake surveys are for waters located in the upper Delta River drainage. With the exception of parts of the Tangle Lake system, all of the lakes are located north of the Denali Highway between Paxson and Mile 34 (Figure 2). Elevation of these waters range from 2,785 to 3,730'.

Six native fish species have been recorded as follows: lake trout, burbot, grayling, round whitefish, longnose suckers, and slimy sculpin. Rainbow trout have been stocked in three of the lakes in years past.

The open water season is relatively short, with most of the lakes not becoming ice free until late June or early July. Ice formation generally occurs again in late September.

The lakes are typically clear and cold. Maximum summer water temperatures range from 51° to 57°F. Shorelines and inlet and outlet streams are rock and gravel, providing excellent spawning habitat for the native fish species. Numbers in parenthesis following the name of each lake in the narrative description refer to the lake's location as numbered in Figure 2.

FIGURE 2: LOCATION OF LAKES SURVEYED IN THE DELTA RIVER DRAINAGE

Name of Lake: Phalarope (1) River System: Delta
Location: 1 1/2 miles north Denali Highway at Mile 34
Position: 63° 06' N 146° 21' W Elevation (ft): 3,730
Surface Area (acres): 100 Maximum Depth (ft): 2
Water Chemistry:

No data available.

Fish Sampling Summary:

No data available.

Remarks:

This lake is part of a shallow lake-stream system forming the headwaters of Rock Creek which eventually flows into upper Tangle Lake.

Due to the shallow depth the lake was not netted, however, grayling and round whitefish probably occur in the lake during the summer months.

Aquatic vegetation is common throughout the lake and the water has a humic stain.

Name of Lake: Glacier (2) River System: Delta
Location: Two miles north Denali Highway at Mile 31
Position: 63° 07' N 146° 15' W Elevation (ft): 3,687
Surface Area (acres): 426 Maximum Depth (ft): 84
Water Chemistry:

Date:	8/30/74
Temp (°F):	55
D.O. (ppm):	9.0
pH:	7.0
MOA (ppm):	34
Hardness (ppm):	17

Fish Sampling Summary:

Glacier Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
8/19/71	26	LT	9.3-21.3	15.7	1.00
	10	RWF	12.4-15.4	13.4	0.38
	9	GR	4.5-13.8	7.6	0.34
8/30/74	21	LT	10.8-25.4	17.0	0.55
	14	RWF	9.0-15.4	12.3	0.37
	1	BB	19.3	...	0.03

Remarks:

This lake was first surveyed in August, 1971, and again in August, 1974. There are three small islands located in the lake. Extensive rocky shoal areas are found near the islands and in the northwest and southeast

portions of the lake. The main inlet entering the northwest corner averages 10' wide and 1' deep. The outlet flows to the south and enters two smaller lakes which flow into Rock Creek.

Scenic mountains rising to over 6,000' border the lake on the east and west. Access is by float plane or a 2 mile foot and ATV (all terrain vehicle) trail. A small one-room shelter exists on the northeast shore.

Lake trout, averaging 15.7" in 1971 and 17.0" in 1974, is the predominant fish species. Grayling, round whitefish and burbot are also available to anglers. Better grayling fishing is perhaps available in the outlet stream-lake system. Anglers contacted in that area in 1974 had caught 16 grayling ranging from 9.3 to 13.8".

Name of Lake: Downwind (3) River System: Delta
Location: 1/4 mile north of Denali Highway at Mile 28.2
Position: 63° 5' N 146° 12' W Elevation (ft): 3,640
Surface Area (acres): 50 Maximum Depth (ft): 6
Water Chemistry:

No data available.

Fish Sampling Summary:

No fish captured in 19 net hours on August 29, 1962 and 18.5 hours on July 10, 1965.

Remarks:

This lake was surveyed in 1962 and 1965. The lake has no inlet or outlet and maximum depth is only 6'. Gill net sampling in both years failed to capture fish.

Name of Lake: Landmark Gap (4) River System: Delta
Location: Three miles north of Denali Highway at Mile 25.3
Position: 63° 07' N 146° 05' W Elevation (ft): 3,217
Surface Area (acres): 760 Maximum Depth (ft): 155
Water Chemistry:

Date:	8/31/71
Temp (°F):	51
D.O. (ppm):	13.0
pH:	7.5
MOA (ppm):	21
Hardness (ppm):	17

Fish Sampling Summary: Landmark Gap

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr.
8/03/71	34	LT	10.8-22.5	15.7	.45-5.25	1.62	0.94
	5	RWF	15.4-18.1	16.8	1.21-1.75	1.54	0.14

Remarks:

Landmark Gap Lake located 3 miles from the Denali Highway at Mile 25.3, may be reached by a foot or all terrain vehicle trail or by float plane. Surveyed in 1971, this lake was found to have a maximum depth of 155'. Greater depths may be present as recordings were made along one transect near the center of the lake. A short outlet of approximately 300' in length flows into a small 80 acre lake before entering the main outlet stream. This small lake has a maximum depth of 20'.

Little shoal area exists in the main lake due to a very steep shoreline. Like Glacier Lake, the east and west sides of the lake are bordered by mountains with elevations exceeding 6,000'. A large inlet averaging 30' wide and 1' deep enters the north end of the lake. The outlet, averaging 20' wide and 2' deep, flows approximately 7 miles before entering the Tangle Lake system.

Good fishing reported by anglers was confirmed with the netting of lake trout up to 22.5" and 5.25 lbs. Average length and weight was 15.7" and 1.62 lbs. Due to rough water caused by high winds the netting was limited to the small lake at the outlet. Larger lake trout undoubtedly are found in the main lake.

Round whitefish averaging 16.8" and 1.54 lbs. were also netted. Although grayling and burbot were not netted they are probably present. Two grayling were caught with sport fishing gear in the outlet stream.

Name of Lake: Landlocked Tangle (5) River System: Delta
Location: Four miles south of Denali Highway at Mile 22.5
Position: 63° 00' N 146° 03' W Elevation (ft): 2,850
Surface Area (acres): 540 Maximum Depth (ft): 90
Water Chemistry:

No data available.

Fish Sampling Summary:

Landlocked Tangle

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
8/27/64	26	LT	11.8-18.5	14.5	0.61
	25	RWF	8.4-12.0	10.0	0.59

Name of Lake: Upper Tangle (6) River System: Delta
Location: South of Denali Highway at Mile 22.5
Position: 63° 02' N 146° 03' W Elevation (ft): 2,848
Surface Area (acres): 350 Maximum Depth (ft): 65
Water Chemistry:

Date:	9/4/75
Temp (°F):	51
D.O. (ppm):	9.0
pH:	9.0
MOA (ppm):	51
Hardness (ppm):	34

Fish Sampling Summary: Upper Tangle

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
8/24/64	4	LT	9.7-21.8	15.7	0.06
	1	BB	...	13.7	0.01
	48	GR	8.8-16.3	13.0	0.73
	97	RWF	7.7-15.1	11.6	1.49

Name of Lake: Round Tangle (7) River System: Delta
Location: North of Denali Highway at Mile 22.5
Position: 63° 03' N 146° 00' W Elevation (ft): 2,791
Surface Area (acres): 384 Maximum Depth (ft): 110
Water Chemistry:

Date:	9/4/75
Temp (°F):	51
D.O. (ppm):	10.0
pH:	8.5
MOA (ppm):	17
Hardness (ppm):	51

Fish Sampling Summary: Round Tangle

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
7/16/64	14	LT	8.9-14.0	12.4	0.58
	6	GR	10.6-13.3	12.1	0.25
	41	RWF	9.7-14.5	11.5	1.70

Name of Lake: Long Tangle (S) River System: Delta
Location: 1 1/2 miles north of Denali Highway at Mile 22.5
Position: 63° 04' N 145° 58' W Elevation (ft): 2,785
Surface Area (acres): ND Maximum Depth (ft): ND
Water Chemistry:

No data available. (Similar to Round Tangle Lake immediately upstream).

Fish Sampling Summary: Long Tangle

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
8/25/64	3	LT	8.0-16.4	11.8	0.07
	2	BB	10.7-11.4	11.0	0.05
	10	GR	8.0-13.8	9.7	0.26
	65	RWF	7.3-13.3	11.0	1.71

Remarks: Tangle Lakes

The Tangle Lakes are a river-lake complex located near Mile 22.5 of the Denali Highway. The system is comprised of four lakes connected by stream-riffle areas. The total surface area exceeds 1,800 acres. Round Lake is the deepest lake with a maximum recorded depth of 110'.

Surveys conducted in 1964, indicated that Landlocked Tangle, located 4 miles south of the Denali Highway probably has the best lake trout population. It may be reached by a 1/4 mile portage from Upper Tangle Lake. Lake trout ranging from 11.5" to 18.5" and averaging 14.5" were netted. Round whitefish averaging 10" are also present.

The highest catch per net hour for grayling was 0.73 in Upper Tangle Lake. Grayling averaging 13.0" were netted. Burbot and round whitefish are found throughout the system. Suckers, although not netted in the lower lakes, were reported in two upper landlocked lakes in 1965 and are probably also present throughout the system.

A considerable amount of study has been conducted on the Tangle Lakes and is reported in the Annual Reports of Progress from 1964 to 1970 and 1973 to 1974.

From 1964 to 1966 a total of 5,339 grayling was tagged in the Tangle Lakes system. Tag recoveries indicate some fish remain in or near the deep lakes while others move to the shallow portions of the system during June and July, moving back to deeper water in late summer. Length frequency data for the grayling tagged from 1964 to 1966 show 53.6% in the 6.5" to 8.4" class, 27.8% from 8.5" to 10.4", 11.0% from 10.5" to 12.4", 7.0% from 12.5" to 14.4" and 0.6% from 14.5" to 16.4".

In 1968, grayling in the three predominant age groups, II, III, and IV had average lengths of 7.8", 10.1" and 12.0", respectively. Grayling at age VII averaged 15.4" and represented the oldest age group.

A population estimate conducted in 1969 revealed an estimated 36,985 grayling in the area between Long Tangle Lake and Lower Tangle Lake.

Creel census conducted on Tangle Lakes from June 22 through September 2, 1968 revealed an estimated total of 6,966 angler hours and 6,130 grayling harvested. Grayling catch per man-hour was 0.88, while lake trout were caught at a rate of 0.5 fish per man-hour.

Creel census conducted again in 1973 for the period from June 24 through August 9, provided an estimate of 3,105 angler hours and 3,291 grayling harvested. Catch success for grayling and lake trout was 1.09 and 0.14 fish per hour, respectively.

An important part of the Tangle Lakes system is the grayling fishery available in the Delta River flowing out of Tangle Lakes. This is a popular float trip fishery to the Richardson Highway near Mile 212. This stream is covered in greater detail in the stream survey section.

Two public campgrounds maintained by the Bureau of Land Management are located north and south of the Denali Highway at Mile 22.5. Vehicle counts and visitor registration during 1975 provide counts of 6,189 vehicles with an average of 3.84 people per vehicle. Average length of stay was 4.36 days for a total of 103,615 visitor days. These counts are probably high since visitors staying for longer periods probably are more likely to register. However, the popularity of the area is indicated.

Name of Lake: Fish Lake (9) River System: Delta
Location: 12 miles north of Denali Highway at Mile 23
Position: 63° 14' N 146° 00' W Elevation (ft): 3,160
Surface Area (acres): 467 Maximum Depth (ft): 66+
Water Chemistry:

Date:	7/25/75
Temp (°F):	56
D.O. (ppm):	9.0
CO_2 (ppm):	15.0
pH:	8.7
MOA (ppm):	86
Hardness (ppm):	86

Fish Sampling Summary: Fish Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
7/25/75	46	GR	5.4-17.3	13.1	1.64

Remarks:

Fish Lake was first surveyed in 1975. Due to its distance of 12 miles from the Denali Highway, access is limited to float planes.

A maximum depth of 66' was recorded, however, malfunctioning of the fathometer occurred so greater depths probably exist.

Four small islands are found in the lake. The main inlet flows into the west side of the lake and averages 3' wide and 6" deep. The outlet flows to the north a distance of 3.5 miles before entering Eureka Creek. The gradient is steep and may be a barrier to upstream fish movement. Average width is 16' and average depth is 6". A private recreation cabin is present near the outlet.

Grayling up to 17.3" and averaging 13.1" were the only fish captured with two gill nets fished overnight. Capture rate was 1.64 fish per net hour.

The cabin owner reports that present usage is very light. Charter flights from Summit Lake probably account for most of the pressure.

Name of Lake: Dude Lake (10) River System: Delta
Location: 3 1/2 miles north of Fielding Lake near Mile 200.5 of the Richardson Highway
Position: 63° 13' N 145° 44' W Elevation (ft): 3,340
Surface Area (acres): 120 Maximum Depth (ft): 53
Water Chemistry:

Date:	7/23/75
Temp (°F):	56
D.O. (ppm):	11.0
CO_2 (ppm):	5.0
pH:	8.5
MOA (ppm):	51
Hardness (ppm):	51

Fish Sampling Summary:

No fish captured in two gill nets set overnight on July 23, 1975.

Remarks:

Dude is a 120 acre lake having a maximum recorded depth of 53'. Located on a high rolling plateau 3.5 miles north of Fielding Lake, the lake has no existing access trail or known usage.

Two small inlets entering the west side of the lake are the result of melting snowpack. The larger averages 30" wide and 4" deep.

The outlet is 6' wide and 1' deep. Flowing to the southwest, a distance of 11 miles, the outlet stream eventually enters the Delta River. The steep gradient probably is a barrier to upstream fish movement.

The lake is probably barren as indicated by the failure of gill nets to capture fish. The lake would be suitable for fish introductions if and when it was deemed desirable.

Name of Lake: Fielding Lake (11) River System: Delta
Location: 1 1/2 miles west of Richardson Highway at Mile 200.5
Position: 63° 10' N 145° 40' W Elevation (ft): 2,973
Surface Area (acres): 1,600 Maximum Depth (ft): 60
Water Chemistry:

Date:	3/28/68	8/10/72	9/4/75
Temp (°F):	ND	57	49
D.O. (ppm):	8.0 @ 4' 6.5 @ 25'	10.0	8.0
pH:	ND	8.5	8.0
MOA (ppm):	ND	103	86
Hardness (ppm):	ND	86	103

Fish Sampling Summary: Fielding Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
8/22/64	16	LT	14.1-26.8	18.6	0.14
	7	BB	10.0-22.4	15.8	0.06
	9	GR	9.3-16.6	12.6	0.07
	164	RWF	8.2-13.5	11.7	1.43
8/05/71	5	LT	17.7-27.2	20.9	0.05
	2	BB	20.9		0.02
	116	GR	4.9-14.8	10.2	1.14
	71	RWF	4.7-15.2	11.3	0.70

Remarks:

Fielding Lake is located 1 1/2 miles by gravel road west of the Richardson Highway at Mile 200.5. Maximum recorded depth is 60'. The shoreline area is steep around much of the lake, although sizeable shoal areas are present in bays at the southwest end of the lake.

There are four inlets of significance: one entering the northwest side (2-3 cfs), one entering the west end (3-4 cfs), one entering the bay on the south shore (10-12 cfs) and one entering the southeast side (2-3 cfs). The outlet flows north about 2 miles before entering Phelan Creek. It averages about 30' wide and 18" deep.

In 1971 grayling was the predominant species, being captured at a rate of 1.14 fish per net hour. The average length of 10.2" was less than in 1964. Lake trout averaged 20.9", although only five were captured. Two burbot measured 20.9". Seventy-one round whitefish averaged 11.3".

In 1965 investigations were conducted in Fielding Lake and its tributaries in an attempt to document grayling spawning dates, areas, and spawning migration. Fourteen grayling spawners were observed on June 20 in an inlet located on the south side of the lake. Approximately 50% of the stream was covered by ice bridges and water temperature was 39°F. Three of four grayling collected were ripe males and a single female was nearly ripe.

In 1967, 25 to 30 pairs of grayling spawners were observed in an inlet during mid-to late June. Water temperature ranged from 42° to 49°F.

A Bureau of Land Management campground is located near the outlet of the lake. Vehicle counts and visitor registration during 1975 indicated a total vehicle count of 1,824 from June 18 to September 29. An average of 3.94 people per vehicle and an average stay of 4.34 days provided a total of 31,190 visitor days estimated for the period.

Actual creel census information is not available; however, excellent grayling and lake trout fishing is reported. Lake trout up to 12 lbs. were caught in 1975. Late winter fishing for burbot and lake trout is popular and rewarding.

Several private recreational cabins are located along the northeast shoreline.

Name of Lake: Two Bit Lake (12)
Location: Two miles north of Denali Highway
Position: 63° 08' N 145° 39' W
Surface Area (acres): 269

River System: Delta at Mile 7
Elevation (ft): 3,298
Maximum Depth (ft): 65

Water Chemistry:

Date:	5/14/74	7/17/74
D.O. (ppm):	13.0	ND
CO_2 (ppm):	5.0	5.0
pH:	6.7	7.0
MOA (ppm):	34	17
Hardness (ppm):	34	51

Fish Sampling Summary: Two Bit Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr.
7/9-12/63	195	LT	6.8-17.2*	14.2	0.6-2.0	1.2	0.39
7/17/74	59	LT	4.7-16.5	13.4	...	...	2.68

* Lengths and weights are from a sample of 25 fish.

Remarks:

Located two miles north of the Denali Highway at Mile 7, this 269 acre lake has a maximum depth of 65'.

There are no visible inlets, and the outlet, which is 10' wide and 4" deep, flows north for about 300' then goes underground. Further downstream the flow resurfaces and enters Fielding Lake.

In 1963, 195 lake trout were gill netted from Two Bit Lake and transported by military helicopter for transplant into Harding Lake.

A sample of 25 fish had a length range of 6.8-17.2" and averaged 14.2". Weight ranged from 0.6 to 2.0 lbs. and averaged 1.2 lbs. The smallest fish were aged at 7 years and the largest at 17.

Gill net sampling conducted again in 1974, resulted in the capture of 59 lake trout ranging from 4.7 to 16.5" and averaging 13.4". Catch frequency was high at 2.68 fish per net hour.

No other fish species have been reported during past investigations.

A limited amount of sport fishing by investigators in 1974 revealed excellent success for lake trout. Present usage is light, although a charter service from Summit Lake transports to the lake, and provides a canoe and motor at the lake for patrons.

Name of Lake: Crystal #1 Lake (13) River System: Delta
Location: One mile south of Fielding Lake near Mile 200.5 of the Richardson Highway
Position: 63° 09' N 145° 39' W Elevation (ft): 3,490
Surface Area (acres): 77 Maximum Depth (ft): 45
Water Chemistry:

Date:	7/16/74
Temp (°F):	58
D.O. (ppm):	10.0
CO_2 (ppm):	5.0
pH:	6.7
MOA (ppm):	17
Hardness (ppm):	17

Fish Sampling Summary: Crystal #1 Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
1961	11	RT	...	8.8	11.00
7/16/74	53	GR	4.9-14.1	10.2	1.33

Remarks:

This lake is located in the high rolling hills south of Fielding Lake. There is no inlet or outlet, although during peak runoff the lake may flow a distance of about 2 miles down a steep gradient into Fielding Lake.

The lake has been stocked with rainbow trout in 1960, 1962, 1963 and 1974. Although little follow-up information is available, gill netting in 1961, following the initial plant, captured 11 rainbow trout averaging 8.8".

In 1974, 53 grayling ranging from 4.9 to 14.1" and averaging 10.2" were netted. No earlier record of their presence was reported.

The light sport fishing pressure is from anglers hiking or traveling by all terrain vehicle from Fielding Lake.

The 1974 rainbow trout stocking should be evaluated for survival and growth.

Name of Lake: Crystal #2 Lake (14) River System: Delta
Location: 1 1/2 miles south of Fielding Lake near Mile 200.5 of the Richardson Highway
Position: 63° 09' N 145° 38' W Elevation (ft): 3,505
Surface Area (acres): 70 Maximum Depth (ft): 30
Water Chemistry:

Date:	7/16/74
Temp (°F):	57
D.O. (ppm):	10.0
CO_2 (ppm):	5.0
pH:	6.7
MOA (ppm):	17
Hardness (ppm):	17

Fish Sampling Summary: Crystal #2 Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
7/16/74	31	GR	6.3-14.4	12.2	2.58

Remarks:

This lake is located about 1/3 mile southeast of Crystal #1. Maximum depth recorded in 1974 was 30'. Extensive shoal areas of rock and gravel exist at the north and south ends and around the margin of the lake. There is no inlet or outflow. During peak spring runoff there may be some flow to the north into Fielding Lake.

Only grayling were captured during test gill netting in 1974. Light fishing pressure occurs during the relatively short open water period by anglers hiking in from Fielding Lake.

Name of Lake: Seven Mile Lake (15) River System: Delta
Location: 1/2 mile north of Denali Highway at Mile 7
Position: 63° 06' N 145° 37' W Elevation (ft): 3,270
Surface Area (acres): 90 Maximum Depth (ft): 34
Water Chemistry:

Date:	9/4/75
Temp (°F):	51
D.O. (ppm):	10
pH:	7.5
MOA (ppm):	51
Hardness (ppm):	34

Fish Sampling Summary: Seven Mile Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
8/26/60	254	LT	7.2-18.0	13.6	1.76
	3	BB	11.2-11.4	11.3	0.01
7/11/65	52	LT	7.5-18.7	15.0	1.30
8/02/73	31	LT	15.7-17.9	16.9	0.70
	2	BB	14.2-16.9	15.6	0.05

Remarks:

An improved gravel road leads to the shoreline of this lake located 1/2 mile north of Mile 7 of the Denali Highway.

There is no visible inlet, however a substantial outlet flows from the northeast corner of the lake.

Extensive gill netting in August, 1960, resulted in the capture of 254 lake trout ranging from 7.2 to 18.0". Mean length was 13.6". Three burbot 11.2-11.4" were also netted.

Further netting in 1965 and 1973 revealed an increased mean length of 15.0" and 16.9", respectively. Catch frequency decreased from 1.76 fish per net hour in 1960 to 1.30 in 1965 and 0.70 in 1973.

Improved access and increased use in recent years probably have resulted in the reduced net catch and improved fish size.

Name of Lake: Fourteen Mile (Caribou) (16) River System: Delta
Location: 1 1/4 mile north of Denali Highway at Mile 14
Position: 63° 04' N 145° 48' W Elevation (ft): 3,580
Surface Area (acres): 90 Maximum Depth (ft): 40
Water Chemistry:

No data available.

Fish Sampling Summary: Fourteen Mile Lake

No fish were captured by 125' experimental gill net in 18 net hours on July 8, 1965, nor by same method in 40 net hours on August 4, 1970.

Date	No.	Species	Length (in) Range	Mean	Fish/ Net hr.
9/05/68	4	RT	17.3-20.4	18.5	0.10

Remarks:

Fourteen Mile, or Caribou Lake as it is also called, is located about 1 1/4 miles north of the Denali Highway at Mile 14.

A small inlet enters the southeast corner. There is no outlet.

Rainbow trout have been planted three times since 1961. Efforts to substantiate survival of these plants by test netting were unsuccessful until 1968 when four rainbow trout were captured. They ranged from 17.3" to 20.4" in length and averaged 18.5". One of the fish was found to be from the 1962 stocking. The slow rate of growth is a result of the relatively high altitude, the subsequent short growing season and cold water temperatures.

Name of Lake: 16.8 Mile Lake (17) River System: Delta
Location: 200 yards north of Denali Highway at Mile 16.8
Position: 63° 03' N 145° 53' W Elevation (ft): 2,990
Surface Area (acres): 40 Maximum Depth (ft): 58
Water Chemistry:

Date:	9/4/75
Temperture (F°):	51
DO (ppm):	9.0
pH:	7.5
MOA (ppm):	17
Hardness (ppm):	34

Fish Sampling Summary: 16.8 Mile Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
8/26/62	17	LT	10.0-16.3	13.7	0.94
	7	GR	12.2-14.7	13.4	0.38
7/08/65	14	LT	10.8-19.7	13.8	0.29
	10	GR	8.0-14.0	11.0	0.21

Remarks:

First surveyed in 1962, gill net samples revealed lake trout averaging 13.7" and grayling averaging 13.4". Netted again in 1965, lake trout captured averaged 13.8" and grayling averaged 11.0".

Being close to the Denali Highway, the lake provides relatively good shoreline fishing. Fishing pressure is light due to the number of similar lakes in the area.

There were no inlets or outlets reported at the time of the survey. Water color is clear.

Name of Lake: Rusty Lake (18) River System: Delta
Location: 1/2 mile north of Denali Highway at Mile 16.8
Position: 63° 03' N 145° 53' W Elevation (ft): 3,040
Surface Area (acres): 30 Maximum Depth (ft): Unknown
Water Chemistry:

Date:	9/4/75
Temp (°F):	50
D.O. (ppm):	9.0
pH:	7.5
MOA (ppm):	34
Hardness (ppm):	34

Fish Sampling Summary: No data available.

Remarks:

Also located near Mile 16.8 of the Denali Highway, this 30 acre lake is about 1/4 mile north of 16.8 Mile Lake.

The lake has no inlets and one small outlet 3' wide and 4" deep. It drains south, eventually into Round Tangle Lake. Water color is slightly humic stained. No depth was recorded.

The lake was not netted when first investigated in 1965. However, anglers contacted after fishing the lake had near limits of large grayling and reported many small lake trout.

Due to the small size and number of similar lakes in the area no further investigation is justified at this time.

Name of Lake: Seventeen Mile (19) River System: Delta
Location: North side of Denali Highway at Mile 17
Position: 63° 03' N 145° 53' W Elevation (ft): 2,970
Surface Area (acres): 7 Maximum Depth (ft): 5
Water Chemistry:

No data available.

Fish Sampling Summary: Seventeen Mile Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
7/09/65	3	GR	10.7-14.8	12.8	0.17

Remarks:

This small 7 acre lake has a maximum depth of only 5'. The water has a humic stain color. A small outlet 6' wide and 6" deep exits the west end.

Netting in July, 1965, resulted in the capture of three grayling. Since the lake probably freezes to the bottom during the winter, the grayling probably enter through the outlet stream from Tangle Lakes during the summer.

Lake Surveys of Waters Near the Richardson Highway in the Lower Delta River Drainage

The following lake surveys are for waters located near the Richardson Highway in the lower Delta River drainage. All of the lakes are east of the Delta River and most are located on the Ft. Greely Military Reservation. Elevations of these waters range from 1,340' to 2,810'.

The only three native fish species found in these lakes are grayling, longnose suckers and slimy sculpin. Many of the lakes were barren, and of those found suitable for fish production, several have been stocked with rainbow trout, silver salmon and grayling.

Lakes at the lower elevations normally become ice free around mid-May. Surface water temperatures during the summer in the shallower lakes sometimeexceed 70°F. Most of the lakes have no inlets or outlets and those stocked with rainbow trout or silver salmon require regular stocking to maintain a sport fishery.

The largest lake in the area is Bolio with 128 surface acres.

Name of Lake: Bolio Lake (20) River System: Delta
Location: 2 1/2 miles southwest of Richardson Highway at Mile 260; located on Ft. Greely Military Reservation
Position: 63° 54' N 145° 50' W Elevation (ft): 1,395
Surface Area (acres): 128 Maximum Depth (ft): 13
Water Chemistry:

Date:	3/22/72	3/19/73	7/3/73	4/5/75
Temp (°F):	ND	ND	64	ND
D.O. (ppm):	3.0	9.0	10.0	3.4
CO_2 (ppm):	ND	5.0	ND	ND
pH:	7.0	7.0	8.5	7.0
MOA (ppm):	103	68	68	68
Hardness (ppm):	137	86	68	85

Fish Sampling Summary: Bolio Lake

Bolio Lake has been stocked since 1953, however, only sampling results since 1970 are presented.

			Length (in)		Weight (lb)		Fish/
Date	No.	Species	Range	Mean	Range	Mean	Net hr.
7/16/70	18	SS	8.7-18.1	13.6	.32-2.2	1.1	0.86
5/25/71	2	SS	14.3-14.4	14.4	...	...	0.03
8/16/72	18	SS	6.5-12.2	8.3	.15- .80	.3	9.00
7/03/73	33	SS	9.1-10.9	10.0	...	...	0.87
	13	SSC	3.5- 4.0	...	...	...	...
11/29/73	19	SS	3.7-11.6	6.6	...	...	...
	1	SSC	3.8	...	...	...	0.02
11/11/74	46	SS	6.1-18.5	9.7	.12-2.99	.89	0.88
10/03/75	165	SS	3.8- 4.8	...	...	...	2.29
	30	SS	7.9-13.4	9.8	...	...	0.42

Remarks:

Although surface area for Bolio Lake is recorded at 128 acres, low water levels in recent years have reduced the water area to less than 100 acres. Maximum depth is only 13', making it the shallowest of the regularly managed lakes in the area.

The bottom type is mostly rock and gravel; however the north end is covered by fine sand and the south end has a thick layer of organic muck. Aquatic vegetation is common in the southern one-fourth of the lake.

Rolling hills forested with mixed stands of spruce and birch surround the lake. There is no outlet and snow-melt and rain provide the only source of inflow.

Rainbow trout or silver salmon have been stocked almost annually since 1955. Only silver salmon have been stocked since 1966 with plants generally made every other year.

Since virtually all of the lake is littoral area the productivity is high. Rainbow trout up to 5 lbs. were reported in the early years of stocking. In 1974, a silver salmon 18.5" in length and weighing 3 lbs. was netted.

In recent years late winter dissolved oxygen levels have dropped to less than 4 ppm, although evidence of winterkill has not been noted. If water levels continue to decline winterkill may become a serious problem.

A public swimming beach and picnic area is located at the north end of the lake. The lake is also occasionally used by the military to test equipment.

Summer and winter sport fishing is popular because of the lake's location near Ft. Greely and Delta Junction. Silver salmon entering the harvest average 8" to 10".

Name of Lake: Mark Lake (21) River System: Delta
Location: Five miles southwest of Richardson Highway at Mile 260; located on Ft. Greely Military Reservation
Position: 63° 52' N 145° 51' W Elevation (ft): 1,480
Surface Area (acres): 20 Maximum Depth (ft): 37
Water Chemistry:

Date:	3/22/71	6/27/72	3/19/73	6/13/73
Temp (°F):	ND	62	ND	60
D.O. (ppm):	7.0	10.0	10.0	10.0
pH:	7.0	8.5	7.0	8.0
MOA (ppm):	86	103	68	51
Hardness (ppm):	171	68	86	68

Fish Sampling Summary: Mark Lake

Mark Lake has been stocked since 1964, however only sampling results since 1970 are presented.

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr.
7/17/70	9	RT	5.4-12.3	7.6	...	...	0.45
5/25/71	3	RT	9.8-12.4	11.4	...	...	0.07
6/28/72	68	SS	4.1- 9.6	5.4	...	.08	1.70
6/15/73	41	RT	3.3-10.2	5.7	...	...	.51
11/30/73	9	RT	4.5-14.8	8.0	...	...	.18
11/11/74	1	RT	11.0	...	.72	...	.02

Remarks:

Mark Lake is located on Ft. Greely south of Bolio Lake. The lake is located in a depression surrounded by spruce, birch and aspen covered hills.

The shoreline is steep except on the north and south ends of the lake. Like Bolio Lake, the bottom is rock and gravel with the south end covered by organic muck and the north end by fine sand. Dense aquatic vegetation is found along the south end of the lake.

Rainbow trout and silver salmon were stocked in 1964 and 1965. Since 1966 only rainbow trout have been stocked.

Mark Lake has been a popular fishing area being utilized primarily by military personnel. The lake can be easily fished from the shoreline. A picnic area with tables and fireplaces is available.

Continued management should include stocking of rainbow trout on alternate years not to exceed 250 fish per acre.

Name of Lake: North Twin Lake (22) River System: Delta
Location: 5 1/2 miles southwest of Richardson Highway at Mile 260; located on Ft. Greely Military Reservation
Position: 63° 52' N 145° 50' W Elevation (ft): 1,690
Surface Area (acres): 23 Maximum Depth (ft): 42

Water Chemistry:

Date:	4/6/72	8/8/72	3/15/73	5/24/73
Temp (°F):	ND	62	ND	50
D.O. (ppm):	9.0	9.0	10.0	11.0
CO_2 (ppm):	25.0	ND	5.0	ND
pH:	7.5	8.5	ND	8.3
MOA (ppm):	120	103	86	86
Hardness (ppm):	154	68	103	68

Fish Sampling Summary: North Twin Lake

Date	No	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr.
7/[illegible]/[illegible]	1	RT	8.3- 9.4	8.7	...	...	0.09
	51	S	7.0-12.1	...	...	...	1.10
6/[illegible]/69	15	S	...	...	...	...	0.75
7/[illegible]/70	9	S	11.3-13.2	...	...	...	0.49
5/28/71	1	RT	22.8	...	...	...	0.02
5/15-18/73	1	RT	20.3	...	4.04	...	0.001
	178	S	3.5-16.8	...	.02-2.86	.97	0.31
	1	SSC	3.2	...	...	...	0.001

Name of Lake: South Twin Lake (23) River System: Delta
Location: 5 1/2 miles southwest of Richardson Highway at Mile 260; located on Ft. Greely Military Reservation
Position: 63° 32' N 145° 50' W Elevation (ft): 1,690
Surface Area (acres): 21 Maximum Depth (ft): 23
Water Chemistry:

Date:	12/16/71	4/7/72	8/8/72	3/15/73	5/24/73
Temp (°F):	ND	ND	60	ND	51
D.O. (ppm):	11.0	3.0	9.0	6.0	11.0
CO_2 (ppm):	ND	ND	ND	5.0	ND
pH:	7.5	6.7	8.0	6.7	8.0
MOA (ppm):	34	137	86	68	68
Hardness (ppm):	120	120	68	86	68

Fish Sampling Summary: South Twin Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr.
7/26/67	11	RT	6.5- 9.8	8.2	...	...	0.25
	105	S	...	...	...	...	2.38
6/18/69	25	S	...	...	...	...	1.19
	1	RT	18.9	...	...	...	0.05
7/17/70	22	S	8.7-14.4	...	...	...	0.49
5/28/71	34	S	11.4-16.1	12.4	...	...	0.81
5/21,22/73	146	S	4.5-17.0	...	.03-1.9	...	1.12
11/12/74	18	SS	4.7- 8.0	5.6	.04- .24	.09	0.36
8/22/75	35	SS	7.2- 9.3	8.4	...	...	0.73

Remarks:

North Twin and South Twin lakes are located on Ft. Greely. The shoreline and bottom on both lakes is mostly rock and gravel.

The surrounding hills are sparsely covered with aspen, stunted spruce, birch and alder.

A gravel road was constructed into the lakes in 1971 by the military.

The lakes were stocked in 1966 with rainbow trout. Gill net samples in July, 1967, captured 4 rainbow trout and 51 suckers in North Twin, and 11 rainbow trout and 105 suckers in South Twin. The rainbow trout in North and South Twin lakes averaged 8.7" and 8.2", respectively.

Netting again in 1970 resulted in the capture of 9 suckers in North Twin and 22 suckers in South Twin Lake. No trout were captured.

A single rainbow trout was netted in North Twin in both 1971 and 1973. These trout were 22.8" and 20.3" long, respectively.

Both lakes were rehabilitated with liquid rotenone in May, 1973. Pounds per surface acre estimates for suckers exceeding 7.5 in North and South Twin lakes, respectively was 17.5 and 16.4.

In September, 1973, 6,300 silver salmon were stocked in South Twin Lake. A sample of 18 in November, 1974, averaged 5.6 ". Thirty-five silver salmon netted in August, 1975, averaged 8.4".

Fifteen thousand rainbow trout were stocked in North Twin Lake in 1975.

Survival, growth and harvest should be monitored. Dissolved oxygen recorded as low as 3.0 ppm in South Twin should also be checked.

Name of Lake: Chet Lake (24) River System: Delta
Location: 5 1/2 miles southwest of Richardson Highway at Mile 258.5; located on Ft. Greely Military Reservation
Position: 63° 50' N 145° 50' W Elevation (ft): 1,930
Surface Area (acres): 5 Maximum Depth (ft): 38
Water Chemistry:

Date:	4/21/67	3/30/71	10/17/74
D.O. (ppm):	7.5 @ 7'	8.0	ND
	4.0 @ 14'		
pH:	ND	6.5	7.0
MOA (ppm):	ND	ND	17
Hardness (ppm):	ND	ND	51

Fish Sampling Summary: Chet Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
6/17/64	39	S	6.4-14.4	9.1	1.14
	46	GR	7.6-13.4	8.5	1.35
5/27/71	8	S	8.1- 9.3	8.7	0.04
6/26/74	97	S	4.1-11.2	...	2.43
	21	GR	6.4-11.2	8.9	0.53
	10	SSC	3.0- 3.7	...	0.25

Name of Lake: "J" Lake (25) River System: Delta
Location: 5 1/2 miles southwest of Richardson Highway at Mile 285.5; located on Ft. Greely Military Reservation
Position: 63° 50' N 145° 50' W Elevation (ft): 1,925
Surface Area (acres): 7 Maximum Depth (ft): 54
Water Chemistry:

Date:	4/20/67	3/30/71	10/17/74
D.O. (ppm):	9.0 @ 10'	8.0 @ 4'	11.0
	7.0 @ 19'		
pH:	ND	ND	7.0
MOA (ppm):	ND	ND	51
Hardness (ppm):	ND	ND	68

Fish Sampling Summary: "J" Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
6/17/64	6	S	5.9-10.3	7.6	0.18
	11	GR	6.5-10.5	8.9	0.33
5/27/71	6	S	8.9- 9.6	9.3	0.29
	2	GR	12.4-13.1	12.7	0.10
6/26/74	101	S	3.4-12.4	...	2.53
	47	GR	7.9-13.6	9.6	1.18
	1	SSC	3.7	...	0.02

Name of Lake: Nickel Lake (26) River System: Delta
Location: 5 1/2 miles southwest of Richardson Highway at Mile 285.5; located on Ft. Greely Military Reservation
Position: 63° 50' N 145° 30' W Elevation (ft): 1,950
Surface Area (acres): 3 Maximum Depth (ft): 37
Water Chemistry:

Date:	4/7/64	4/21/67	10/17/74
D.O. (ppm):	6.2 @ 15' 1.5 @ 25'	8.0 @ 10' 5.0 @ 20' 6.0 @ 33'	ND
pH:	ND	ND	7.0
MOA (ppm):	ND	ND	34
Hardness (ppm):	ND	ND	34

Fish Sampling Summary: Nickel Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr.
6/17/64	7	S	6.0- 8.4	7.6	...	...	0.38
5/27/71	1	GR	8.1	...	...	...	0.05
6/26/74	81	S	4.3- 9.8	...	...	.30	2.03
	3	GR	12.1-12.4	12.3	...	.75	0.08

Remarks:

This connecting chain of small lakes is located on Ft. Greely about 17 miles south of Delta Junction. Nickel is the uppermost in the chain, followed by Chet and "J". Flow connecting the lakes is generally limited to several weeks during spring runoff. The largest and deepest lake in the group is "J" Lake which is 7 acres and 54' deep.

The hills surrounding the lakes are sparsely vegetated gravel deposits from past glacial activity. The gravel shorelines are steep with little shoal area existing.

First netted in 1964, the lakes were found to contain indigenous populations of grayling, longnose suckers and slimy sculpin.

The lakes were rehabilitated in August, 1975, with liquid rotenone. The lake was still toxic in early October just prior to freeze-up.

Grayling are recommended for restocking in 1976 if the lake is determined to be non-toxic.

Name of Lake: Circle Lake (27) River System: Delta
Location: 5 1/2 miles southwest of Richardson Highway at Mile 258.5; located on Ft. Greely Military Reservation
Position: 63° Elevation (ft): 1,915
Surface Area (acres): 4 Maximum Depth (ft): 34
Water Chemistry:

Date:	7/30/75
D.O. (ppm):	8.0
CO_2 (ppm):	5.0
pH:	7.0
MOA (ppm):	34
Hardness (ppm):	34

Fish Sampling Summary: Circle Lake

No fish were captured with one gill net fished overnight on July 30, 1975.

Remarks:

Located on Ft. Greely, the lake is part of the group of lakes near Chet, "J" and Nickel. The outlet of "J" Lake flows into Circle Lake during spring runoff. A beaver dam between the two lakes appears to be a barrier to fish movement. Shoreline and terrain are similar to the other lakes.

A small outlet flows to the north into a similar sized lake which is unsurveyed. The outlet is also blocked by a beaver dam.

A gill net set overnight in 1975 failed to capture fish, although suckers and grayling are probably present.

Name of Lake: Big Lake (28) River System: Delta
Location: 6 1/2 miles southwest of Richardson Highway at Mile 260; located on Ft. Greely Military Reservation
Position: 63° 52' N 145° 52' W Elevation (ft): 1,585
Surface Area (acres): 80 Maximum Depth (ft): 9
Water Chemistry:

Date:	2/5/71	3/30/71	12/2/71	4/6/72	3/19/73
D.O. (ppm):	1.8 @ 4' 1.4 @ 5'	0.0 @ 4'	10.0 @ 5'	.6 @ 4'	0.0 @ 4'
CO_2 (ppm):	5.0	ND	ND	35.0	10.0
pH:	6.5	ND	7.0	6.5	6.5
MOA (ppm):	102	ND	68	120	86
Hardness (ppm):	102	ND	68	188	103

H_2S= 1.5 ppm

Fish Sampling Summary: Big Lake

No fish were captured in two gill nets set overnight on May 20, 1975.

Date	No.	Species	Length (in) Range	Length (in) Mean	Weight (lb) Range	Weight (lb) Mean	Fish/ Net hr.
6/03/69	23	GR	8.5- 9.6	9.1	...	...	...
5/26/71	30	GR	4.7-12.5	8.5	.05-.83	.34	.68

Remarks:

Big Lake is located on Ft. Greely about 16 miles south of Delta Junction. The present low water level has exposed a 60 to 80' wide sand, rock and gravel margin around the lake. The relatively flat terrain rises slightly to the east. Stunted spruce, birch and aspen border the west shore with the east end of the lake being open tundra.

Invertebrate fauna is plentiful, however the shallow depth makes the lake vulnerable to winterkill most years.

In 1967, 34,000 grayling fry were stocked experimentally to determine survival and growth under various dissolved oxygen levels. Dissolved oxygen recorded in March, 1968, was 4.0 ppm. Netting in June, 1968, resulted in the capture of 8 grayling in a 30 minute period. Length range was 6.7" to 7.7" and average length was 7.2". Considerable angler utilization of the yearling grayling was noted during 1968.

Fishing success continued to be good in 1969 and 1970. Fish caught by anglers in early spring, 1970, ranged from 8" to 14".

Dissolved oxygen in February, 1971, was recorded at 1.8 ppm at a depth of 4'. Despite the low oxygen levels, 30 grayling ranging from 4.7" to 12.5" were netting in late May, 1971. The smaller size group represented a plant of 50,000 fry stocked in 1970.

Additional plants were made in 1972 and 1973, however netting in May, 1975, failed to capture any fish.

Dissolved oxygen in March, 1973, was recorded at 0.0 ppm.

A boat launching ramp, picnic tables and fireplaces are available.

No further stocking is recommended until the water level improves.

Name of Lake: Left O.P. (29) River System: Delta
Location: 8 miles southwest of Richardson Highway at Mile 260; located on Ft. Greely Military Reservation
Position: 63° 51' N 145° 55' W Elevation (ft): 1,535
Surface Area (acres): 3 Maximum Depth (ft): 9
Water Chemistry:

Date:	3/5/70	2/5/71	4/6/72
D.O. (ppm):	2.5 @ 3'	0.4 @ 6'	0.0 @ 5'
CO_2 (ppm):	ND	10.0	35.0
pH:	ND	7.0	7.0
MOA (ppm):	ND	290	137
Hardness (ppm):	ND	153	205

H_2S= 1.0 ppm

Fish Sampling Summary: Left O.P.

No fish were captured with one gill net in 22.5 hours on May 26, 1971.

Date	No.	Species	Length (in) Range	Mean
6/03/69	12	GR	7.8-8.9	8.3

Remarks:

This small lake is located on Ft. Greely near Big Lake. The present maximum depth is only 9'. If the lake was at the high water line it would probably inundate another 7 acres. The shoreline is composed of rock and gravel, however organic muck covers most of the lake bottom.

Spruce, birch and aspen cover the rolling hills surrounding the lake. The military has provided picnic facilities.

Like Big Lake the lake was experimentally stocked with grayling in 1967. Dissolved oxygen in March, 1968, was recorded at 1.5 ppm. However, a 15 minute gill net set in June, 1968, captured 9 grayling ranging from 7.1" to 7.5" and averaging 7.4". Angler utilization was noted from 1968 to 1970. Grayling harvested in early summer 1970 ranged from 8" to 14".

In 1970, 25,000 grayling fry were again stocked. Dissolved oxygen the following February, 1971, was recorded at 0.4 ppm. Evidence of severe winterkill was observed at break-up. Grayling 5" to 6" and 10" to 12" represented the 1967 and 1970 plants. A gill net set in late May, 1971, failed to capture any fish.

Left O.P. was utilized as a grayling rearing pond during 1975. Twenty-five thousand grayling fry were stocked in early spring and approximately 5,400 fingerling were removed with fyke nets in late September. Survival, growth and removal success was considered excellent. This type of utilization is the only reasonable management option until lake level improves.

Name of Lake: Rapids Lake (30) River System: Delta
Location: 100 yards east of Richardson Highway at Mile 225.5
Position: 63° 30' N 145° 51' W Elevation (ft): 2,375
Surface Area (acres): 5 Maximum Depth (ft): 23
Water Chemistry:

Date:	3/15/71	7/24/72
Temp (°F):	ND	61
D.O. (ppm):	12.0	9.0
pH:	8.0	8.0
MOA (ppm):	ND	120
Hardness (ppm):	ND	154

Fish Sampling Summary: Rapids Lake

Netted in 1962 and 1963 - No fish captured.

Rapids Lake has been stocked since 1962, however only sampling results since 1970 are presented.

			Length (in)		Weight (lb)		Fish/
Date	No.	Species	Range	Mean	Range	Mean	Net hr.
7/16/70	1	RT	9.4	...	...	...	0.05
6/15/71	4	RT	7.6-13.9	10.7	...	...	0.17
7/25/72	5	RT	5.4- 8.9	7.3	.08-.34	.21	0.21
8/01/73	9	RT	4.3- 9.0	7.2	...	...	0.21
12/13/73	1	RT	9.2	...	.32	...	0.06

Remarks:

This small lake is located in mountainous terrain near Mile 226 of the Richardson Highway. The lake was formed by the natural blocking of a narrow canyon by rock and gravel deposits from Falls Creek. Rock walls rising from the water's edge border most of the shoreline. A dense growth of alder, willow and birch surround the lake.

A waterfall on Falls Creek forms a barrier to fish which might enter from the Delta River.

A foot trail east of the highway from the Black Rapids Glacier scenic viewpoint leads to the lake.

The lake has been stocked with rainbow trout regularly since 1962. The largest fish netted was 17" in 1966.

The fishery is utilized primarily by tourists and military personnel from the nearby Black Rapids mountain training site.

Name of Lake: Donnelly (31) River System: Delta
Location: 1/2 mile east of Richardson Highway at Mile 245, 2 miles south of Donnelly Dome
Position: 63° 45' N 145° 48' W Elevation (ft): 2,440
Surface Area (acres): 65 Maximum Depth (ft): 47
Water Chemistry:

Date:	7/08/75
Temp (°F):	63
D.O. (ppm):	10.0
CO_2 (ppm):	5.0
pH:	7.5
MOA (ppm):	34
Hardness (ppm):	34

Fish Sampling Summary: Donnelly Lake

No fish were captured with one gill net fished overnight on July 9, 1975.

Remarks:

Donnelly Lake first surveyed in 1975, is located 1/2 mile east of the Richardson Highway about 2 miles south of Donnelly Dome. Maximum depth is 47' and the lake has a small island near the south shore. Extensive shoal areas exist on the north and west portions of the lake. The shoreline is rock and gravel. The rolling hills surrounding the lake are sparsely covered with stunted spruce with dense patches of willow and alder.

No fish were captured in an overnight gill net set.

The lake was stocked with 8,800 silver salmon in July, 1975.

Unnamed Lakes

In addition to those lakes already described numerous unnamed lakes ranging in size from 2 to 10 surface acres are located between the Richardson Highway and the Delta River from Donnelly Dome to Bolio Lake. One of the lakes, 1 1/2 miles southwest of Donnelly Dome was stocked with rainbow trout in 1974. Three others east of North and South Twin lakes were rehabilitated at the same time as the Twin lakes and restocked with silver salmon and rainbow trout.

At least a dozen other lakes in the area have suitable depths and dissolved oxygen levels to support a fish population. Several of the lakes are known to contain suckers.

A group of lakes east of the Richardson Highway and Jarvis Creek along the 33 Mile Loop Road were found to be very shallow. Maximum depth in all of the lakes was less than 4'.

Name of Lake: Unnamed (Ft. Greely #1) (32) River System: Delta
Location: One mile north of Richardson Highway at Mile 243.3, west side of old Richardson Highway, 2 miles southwest of Donnelly Dome
Position: 63° 45' N 145° 51' W Elevation (ft): 2,810
Surface Area (acres): 1 Maximum Depth (ft): 15
Water Chemistry:

No data available.

Fish Sampling Summary: No data available.

Name of Lake: Unnamed (Ft. Greely #2) (33) River System: Delta
Location: 1 1/2 miles north of Richardson Highway at Mile 243.3, 100 yards east of Old Richardson Highway, 2 miles southwest of Donnelly Dome.
Position: 63° 46' N 145° 51' W Elevation (ft): 2,780
Surface Area (acres): 10 Maximum Depth (ft): 35
Water Chemistry:

No data available.

Fish Sampling Summary:

No fish were captured in overnight gill net set on July 22, 1971. Stocked with 10,000 rainbow trout in 1974.

Name of Lake: Unnamed (34) River System: Delta
Location: 3 1/2 miles north of Richardson Highway at Mile 243.3, 1/2 mile east of Old Richardson Highway, 1/2 mile west of Donnelly Dome

Position: 63° 47' N 145° 49' W Elevation (ft): 2,660
Surface Area (acres): 35 Maximum Depth (ft): 5
Water Chemistry:

No data available.

Fish Sampling Summary:

No data available.

Name of Lake: Unnamed (Ft. Greely #7) (35) River System: Delta
Location: 5 1/2 miles southwest of Richardson Highway at Mile 260; located adjacent to tank trail 1/4 mile east of Twin Lakes on Ft. Greely Military Reservation
Position: 63° 52' N 145° 50' W Elevation (ft): 1,770
Surface Area (acres): 3 Maximum Depth (ft): 35
Water Chemistry:

Winter dissolved oxygen levels are good.

Fish Sampling Summary:

No data available.

Remarks:

Rehabilitated in May, 1973, to remove suckers. Restocked with rainbow trout and silver salmon in fall, 1973.

Name of Lake: Unnamed (Ft. Greely #8) (36) River System: Delta
Location: 5 1/2 miles southwest of Richardson Highway at Mile 260; located adjacent to tank trail 1/4 mile east of Twin Lakes on Ft. Greely Military Reservation
Position: 63° 52' N 145° 50' W Elevation (ft): 1,740
Surface Area (acres): 3 Maximum Depth (ft): 35
Water Chemistry:

Winter dissolved oxygen levels are good.

Fish Sampling Summary: Unnamed Lake #8

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
7/22/71	10	S	2.8-14.6	...	0.42

Remarks:

Rehabilitated in May, 1973. Restocked with rainbow trout in August, 1973.

Name of Lake: Unnamed #9 (37) River System: Delta
Location: 5 1/2 miles southwest of Richardson Highway at Mile 260; located adjacent to tank trail 1/4 mile east of Twin Lakes on Ft. Greely Military Reservation
Position: 63° 52' N 145° 50' W Elevation (ft): 1,740
Surface Area (acres): 3 Maximum Depth (ft): 32
Water Chemistry:

Winter dissolved oxygen levels are good.

Fish Sampling Summary: Unnamed #9

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
7/21/71	27	S	2.8-10.6	...	1.12

Remarks:

Rehabilitated in May, 1973. Restocked with rainbow trout in August, 1973.

Name of Lake: Unnamed (38) River System: Tanana
Location: 1 1/2 miles south of Alaska Highway at Mile 1414; adjacent to 33 Mile Loop Road on Ft. Greely Military Reservation
Position: 63° 57' N 145° 32' W Elevation (ft): 1,340
Surface Area (acres): 20 Maximum Depth (ft): 3
Water Chemistry:

Date:	7/75
Temp (°F):	67
D.O. (ppm):	10.0
CO_2 (ppm):	10.0
pH:	7.0
MOA (ppm):	17
Hardness (ppm):	34

Fish Sampling Summary: Unnamed Lake

Not netted due to shallow depth. No data available.

Name of Lake: Unnamed (39) River System: Delta
Location: 1/2 mile south of Richardson Highway at Mile 244, 3 miles south of Donnelly Dome
Position: 63° 44' N 145° 49' W Elevation (ft): 2,320
Surface Area (acres): 25 Maximum Depth (ft): 18
Water Chemistry:

Date:	4/01/75
D.O. (ppm):	4.0

Fish Sampling Summary: Unnamed Lake

No fish captured with two gill nets fished overnight in 1975.

Lake Surveys of Waters Between the Delta River and Delta Creek

The following lake surveys are for waters located west of Delta Junction between the Delta River and Delta Creek. Most of the lakes are in the Tanana River drainage rather than the Delta, but were included in the study area because of their close proximity.

The lakes are formed in a glacial moraine which parallels the Delta River. Although many of the over 200 lakes are very small or shallow, at least 50 are deep and large enough to have sport fish potential. Most of the lakes surveyed range from 20 to 55 acres, with the largest being 160 acres. Maximum depth recorded on a 55 acre lake was 75'.

Most of the lakes were found to contain indigenous fish species including northern pike, lake chubs, longnose suckers, grayling or slimy sculpin.

All but a few of the northernmost lakes are located on the Ft. Greely Military Reservation and several, including the largest lake surveyed, are within the presently active Oklahoma Bombing Range.

Since no bridges exist across the Delta River, access is limited to snowmachines in the winter or fly-in for those few lakes large enough for landing an airplane.

Many of the lakes would require rehabilitation and the installation of a fish barrier if at a future date they are considered for management.

Name of Lake: Unnamed (40) River System: Tanana
Location: 14 miles southwest of Ft. Greely Military Base, west of Delta River on Ft. Greely Military Reservation
Position: 63° 57' N 146° 12' W Elevation (ft): 1,570
Surface Area (acres): 30 Maximum Depth (ft): 47
Water Chemistry:

Date:	8/27/75
Temp (°F):	57
D.O. (ppm):	8.0
pH:	7.5
MOA (ppm):	51
Hardness (ppm):	34

Fish Sampling Summary: Unnamed Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
8/28/75	27	S	3.5-12.8	...	1.23

Remarks:

This lake is located adjacent to a military maneuver trail about 14 miles southwest of Ft. Greely.

Surveyed in 1975, the lake is located in rolling spruce covered hills which border the north and east shoreline, while boggy tundra is found on the west.

Although there is no visible inlet or outlet, the lake apparently has flowed into a small stream located 1/2 mile to the west. Gill net sampling captured 27 suckers ranging from 3.5" to 12.8" in length.

The water is slightly humic stained and the bottom is organic muck.

Name of Lake: Unnamed (41) River System: Tanana
Location: 13 miles southwest of Ft. Greely Military Base, west of Delta River on Ft. Greely Military Reservation
Position: 63° 57' N 146° 10' W Elevation (ft): 1,590
Surface Area (acres): 25 Maximum Depth (ft): 42
Water Chemistry:

Date:	8/27/75
Temp (°F):	56
D.O. (ppm):	8.0
pH:	7.2
MOA (ppm):	51
Hardness (ppm):	34

Fish Sampling Summary: Unnamed Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
8/28/75	3	S	3.5-8.3	6.2	0.14

Remarks:

This lake is located adjacent to a military trail about 13 miles southwest of Ft. Greely. Located in spruce and birch covered hills, the lake has a shoreline composed mostly of rock and gravel. Some lily pads are found in a small bay on the east and scattered areas along the shoreline.

There is no visible inlet or outlet and the water is clear.

Gill netting revealed the presence of longnose suckers ranging in length from 3.5" to 8.3". Three were captured and other small suckers were observed in the shallows.

Name of Lake: Unnamed Lake (42) River System: Tanana
Location: 14 1/2 miles northwest of Ft. Greely Military Base, west of the Delta River on the Ft. Greely Military Reservation Bombing Range
Position: 64° 01' N 146° 13' W Elevation (ft): 1,520
Surface Area (acres): 160 Maximum Depth (ft): 31
Water Chemistry:

Date:	9/3/75
D.O. (ppm):	10.0
pH:	7.8
MOA (ppm):	34
Hardness (ppm):	51

Fish Sampling Summary: Unnamed Lake

Not netted, however lake chubs were captured by seining on September 3, 1975.

Remarks:

This 160 acre lake is located within the Oklahoma Bombing Range about 14.5 miles northwest of Ft. Greely. The lake has a gently sloping hard sand bottom and a maximum depth of 31'. The present lake level is low exposing a sandy beach around the entire shoreline. Aquatic vegetation is scarce and the water is clear.

Hills to the west of the lake are covered with birch.

Possible contamination may exist in or around the lake as a result of military bombing and strafing activity. Although the lake would have high recreational value, its location and present use are limiting factors.

Several sizeable lakes located to the northwest are also located on the bombing range. From the air all of these lakes appeared shallow, probably less than 6' deep. Sand and mud flats were present around the margins.

Name of Lake: Unnamed Lake (43) River System: Tanana
Location: 9 miles southwest of Ft. Greely Military Base, west of Delta River on Ft. Greely Military Reservation
Position: 63° 55' N 146° 00'W Elevation (ft): 1,710
Surface Area (acres): 45 Maximum Depth (ft): 45
Water Chemistry:

Date:	8/27/75
Temp (°F):	54
D.O. (ppm):	8.0
pH:	7.5
MOA (ppm):	68
Hardness (ppm):	68

Fish Sampling Summary:

No fish captured in overnight gill net set on August 27, 1975. Lake chubs captured by seining.

Remarks:

Located about nine miles southwest of Ft. Greely this lake surveyed in 1975 was found to have a maximum depth of 45'. The lake is currently at least 6' below high water line. A small island is located near the southwest corner and a narrow neck extending to the west is presently separated by a strip of land from the rest of the lake. The shoreline is steep and rocky and the water is clear.

Located on a high bench about 1.5 miles west and 350' above the Delta River, the lake is surrounded by rolling hills covered with large spruce.

No fish were captured in an overnight gill net set, however shoreline seining resulted in the capture of many small lake chubs.

No inlet or outlet exists at the present time and it appears that the surrounding terrain would prevent outflow even if the lake reached the normal high water line.

Name of Lake: Unnamed (44) River System: Tanana
Location: 14 miles west of Donnelly Dome, west of the Delta River on Ft. Greely Military Reservation
Position: 63° 46' N 146° 15' E Elevation (ft): 3,170
Surface Area (acres): 90 Maximum Depth (ft): 5
Water Chemistry:

Date:	9/02/75
Temp (°F):	47
D.O. (ppm):	9.0
pH:	7.0
MOA (ppm):	34
Hardness (ppm):	51

Fish Sampling Summary:

Not netted due to shallow depth. No data on length, weights, or specific species composition available.

Remarks:

This lake is located 14 miles west of Donnelly Dome. At an elevation of 3,170' the surrounding terrain is gently rolling tundra. The shoreline and lake bottom are rocky. The water was clear and the bottom could be seen throughout the entire lake.

Due to the shallow depth, no netting was conducted.

Name of Lake: Unnamed (45) River System: Delta
Location: 7 1/2 miles southwest of Donnelly Dome, west of the Delta River on Ft. Greely Military Reservation
Position: 63° 46' N 146° 02' W Elevation (ft): 1,825
Surface Area (acres): 25 Maximum Depth (ft): 24
Water Chemistry:

Date:	9/02/75
Temp (°F):	54
D.O. (ppm):	9.0
pH:	7.7
MOA (ppm):	68
Hardness (ppm):	85

Fish Sampling Summary: Unnamed Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
9/02/75	33	GR	4.7-14.2	8.5	1.38
	6	SSC	3.0- 4.0	...	0.25

Remarks:

This lake is located 7.5 miles west of the Delta River. Aquatic vegetation is common in the shallow north end of the lake. The bottom is mostly sand and mud, although some rock and gravel are found. The water is clear and the surrounding hills are forested with spruce and birch. A small outlet drains about 2 miles to the north before entering the Delta River.

A gill net sample in September resulted in the capture of 33 grayling ranging from 4.7" to 14.2" and averaging 8.5", and 6 slimy sculpin.

Name of Lake: Unnamed (46) River System: Tanana
Location: 10 1/2 miles northwest of Donnelly Dome, west of the Delta River on Ft. Greely Military Reservation
Position: 63° 52' N 146° 05' W Elevation (ft): 2,040
Surface Area (acres): 30 Maximum Depth (ft): 45
Water Chemistry:

Date:	9/03/75
Temp (°F):	54
D.O. (ppm):	8.0
pH:	7.0
MOA (ppm):	17
Hardness (ppm):	17

Fish Sampling Summary: Unnamed Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
9/03/75	1	NP	...	13.4	0.05

Name of Lake: Unnamed (47) River System: Tanana
Location: 10 1/2 miles northwest of Donnelly Dome, west of the Delta River on Ft. Greely Military Reservation
Position: 63° 51' N 146° 05' W Elevation (ft): 2,050
Surface Area (acres): 40 Maximum Depth (ft): 72
Water Chemistry:

Date:	9/02/75
Temp (°F):	54
D.O. (ppm):	8.0
pH:	7.2
MOA (ppm):	34
Hardness (ppm):	17

Fish Sampling Summary: Unnamed Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
9/02/75	2	NP	8.8-14.2	11.5	0.10

Name of Lake: Unnamed (48) River System: Tanana
Location: 10 miles northwest of Donnelly Dome, west of the Delta River on Ft. Greely Military Reservation
Position: 63° 50' N 146° 06' W Elevation (ft): 2,140
Surface Area (acres): 55 Maximum Depth (ft): 75
Water Chemistry:

Date:	9/03/75
Temp (°F):	54
D.O. (ppm):	9.0
pH:	7.5
MOA (ppm):	17
Hardness (ppm):	34

Fish Sampling Summary: Unnamed Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
9/02/75	2	NP	11.0-17.7	14.4	0.10

Remarks:

This group of three lakes ranging from 30 to 55 surface acres is located about 10 miles northwest of Donnelly Dome. Maximum depths from north to south are 45', 72' and 75', respectively. The largest lake on the south is irregularly shaped and has a small island near the southeast corner. Each of the lakes has outlets which drain to the north and beaver dams are located at each outlet. The lake on the south has an outlet 4' wide and 8" deep.

The surrounding hills are mostly open tundra. The lake shorelines are mostly rock and gravel dropping steeply into deep water.

Northern pike were netted in each of the lakes with two being captured in the middle lake and one in each of the others. They averaged 15.8" and ranged from 13.8" to 17.7".

Spawning habitat is probably best in the north lake which has more shallow areas and a greater amount of aquatic vegetation. However, as indicated by the net catch, none of the lakes are well suited for a northern pike fishery.

The nearest trail is a military tank trail located 5 miles north of the north lake. Although marginal in size, a suitable aircraft equipped with skiis or floats could probably land on the lakes.

Name of Lake: Rainbow Lake (49) River System: Tanana
Location: 13 miles northwest of Delta Junction
Position: 64° 08' N 146° 07' Elevation (ft): 1,120
Surface Area (acres): 96 Maximum Depth (ft): 34
Water Chemistry:

Date:	6/21/71	9/19/72
Temp (°F):	71	46
D.O. (ppm):	11.0	ND
pH:	7.5	7.5
MOA (ppm):	34	51
Hardness (ppm):	34	68

Fish Sampling Summary: Rainbow Lake

Date	No.	Species	Length (in) Range	Length (in) Mean	Fish/ Net hr.
9/20/72	71	RT	8.4-15.0	13.0	1.69
6/26/73	5	RT	14.4-16.2	15.6	0.28
12/07/73	15	RT	13.4-19.7	18.0	0.33

Remarks:

First surveyed in June, 1971, this 96 acre lake was found to be barren. Maximum depth is 34' and the water is clear. The lake has no inlet or outlet and presently is about 6' below the high water line. The shoreline is mostly gravel covered by a layer of mud on the east end. The gently rolling hills surrounding the lake are covered with mixed spruce and birch forest.

Rainbow Lake was stocked with 59,100 rainbow trout in July, 1971. Fourteen months later in September, 1972, the fish averaged 13.1" and ranged from 8.4" to 15.0". Further sampling in December, 1973, revealed 15 fish ranging from 13.4" to 19.7" and averaging 18.0".

Access during the summer is limited to fly-in, however during the winter access is also available via an 8 mile snowmachine trail from Big Delta.

Summer and winter sport fishing has been excellent since 1972. Most of the original plant were harvested by 1974 and an additional 39,000 rainbow trout fingerling were stocked.

Stream Surveys of Waters in the Delta River Drainage

The Delta River originates in the Tangle Lakes system and flows in a northerly direction a distance of 80 miles before entering the Tanana River at Big Delta. The river is clear and provides excellent grayling fishing form the Tangle Lakes to Eureka Creek. Turbid water heavily laden with glacial silt enters from Eureka Creek. Phelan Creek joins the Delta River near Mile 212 of the Richardson Highway and the highway parallels the Delta River the remainder of the distance to its confluence with the Tanana.

Many streams flowing west out of the Alaska Range cross the Richardson Highway before entering the Delta River. A few are relatively clear, however, most are turbid with glacial silt and flow at a torrential rate. The stream bottoms are generally strewn with boulders and gravel.

Survey information was collected during 1971 and 1975 on 21 streams located between Isabel Pass and Delta Junction. Flows range from less than 5 to over 400 cfs.

The Trans Alaska Pipeline paralleling the Richardson Highway between Delta Junction and Isabel Pass will cross most of these streams in the lower mile before they enter the Delta River. The pipeline will be buried below the stream beds.

Most of these streams have no fish potential due to their glacial character and torrential flow. Survey information is summarized for several of the streams having the best potential for supporting a fish population.

Name of Stream: Donnelly Tributary to: Delta
River System: Tanana
Location: Near Mile 238 of the Richardson Highway, 29 miles south of Delta Junction
Position: 63° 40' N 145° 52' W
Length (mi): 3 Width (ft): 6
Water Chemistry and Flow Data:

Date:	7/29/75
Discharge (cfs):	10
Temp (°F):	46
pH:	8.5
MOA (ppm):	170
Hardness:	187

Remarks:

This short stream originates in springs on the Delta River flood plain about 2.5 miles southeast of the Richardson Highway at Mile 238. The stream bottom is gravel and the flow is rapid. A series of beaver dams is located both upstream and downstream from the highway. The stream flows through a large culvert at the highway which may be a barrier to upstream fish passage.

The stream was sampled with a back-pack shocker in late August, 1975. Five grayling and six slimy sculpin were captured, all downstream from the highway. The grayling ranged from 3.3" to 10.5" and averaged 6.7".

The stream maintains flow throughout the winter, and summer flows are stable.

The state maintains a public campground adjacent to the stream between the highway and the Delta River.

No known sport fishery exists and the few grayling sampled in the stream probably accounted for most of the population at that time.

Grayling fry were stocked in the beaver dams above the highway in 1973, however the plant did not provide a sport fishery.

Name of Stream: Ober Tributary to: Jarvis
River System: Delta-Tanana
Location: 1 mile east of the Richardson Highway at Mile 244, 22 miles South of Delta Junction
Position: 63° 46' N 145° 42' W
Length (mi): 17 Width (ft): 10
Water Chemistry and Flow Data:

Date:	10/15/75
Discharge (cfs):	11
Temp (°F):	33
pH:	9.0
MOA (ppm):	153
Hardness:	136
CO_2:	10.0

Remarks:

This small clear stream originates in springs, however having a large drainage area, it is subject to flooding as evidenced by deep, scoured pools, gravel bars, and log jams.

Two grayling 7.3" and 8.3" in length were captured with a back-pack shocker in a 600' section in mid-October, 1975. Greater numbers may be present earlier in the summer, however no known sport fish usage exists.

Inspection of bottom material indicated invertebrates (primarily Caddis) to be scarce.

A presently inactive coal mine is located near the headwaters.

Name of Stream: Rock Creek Tributary to: Tangle Lakes
River System: Delta
Location: Mile 25.3 on the Denali Highway west of Paxson
Position: 63° 02' N 146° 03' W
Length (mi): 19 Width (ft): 15
Water Chemistry and Flow Data:

Date:	6/04/65
Temp (°F):	34

Remarks:

Rock Creek heads in a lake in High Valley north of the Denali Highway. It flows through Phalarope and other shallow lakes before entering Tangle Lakes 19 miles to the southeast.

The bottom is composed of rock and gravel and the flow is swift.

Observers in 1965 reported large ice bridges and ice shelves covered portions of the creek on June 4. Water temperature on that date was 34°F and a gill net captured no fish nor was any observed.

Grayling move freely throughout the creek and connecting lake systems during the summer and apparently enter the deeper lakes during winter.

Best fishing occurs at the outlets of the connecting lakes and good catches of grayling 8" to 14" have been noted.

Name of Stream: Wildhorse Creek Tributary to: Delta River
River System: Delta-Tanana
Location: 17 miles northwest of Paxson
Position: 63° 10' N 145° 56' W
Length (mi): 11 Width (ft): 6
Water Chemistry and Flow Data:

No data available.

Remarks:

This small clear stream originates near the east end of Sevenmile or Bolder Lake and flows to the east about 11 miles before entering the Delta River.

The swift flowing stream is located in mountainous terrain and the bottom is comprised of rock and gravel.

No information on the fish population is available, however grayling no doubt enter the stream from the Delta River. Because of its small size and remote location it has little importance as a sport fishery, although it may provide important rearing habitat for small grayling.

Name of Stream: Phelan Creek Tributary to: Delta River
River System: Tanana
Location: Mile 201.5 of the Richardson Highway, 22 miles north of Paxson
Position: 63° 20' N 145° 44' W
Length (mi): 16 Width (ft): 30
Water Chemistry and Flow Data:

Date:	8/11/75	11/20/74
Discharge (cfs):	212	ND
Temp (°F):	41	36
pH:	7.5	8.5
MOA (ppm):	68	102
Hardness:	68	170
CO_2:	ND	5.0
DO	ND	8.0

Remarks:

Phelan Creek heads about 2 miles southwest of the Gulkana Glacier terminus. At the Richardson Highway bridge the width is 30' and average depth is 18". Further downstream the creek widens to over 1,000'. The water is milky colored from glacial silt during the summer and the flow is torrential (about 6 f/s). The bottom type is boulders and gravel.

A clear spring-fed side channel enters the main stream near Mile 204 of the Richardson Highway. Sampling in October, 1975, documented the presence of grayling and Dolly Varden. The grayling ranged from 6" to 8" and averaged 6.7", while the Dolly Varden ranged from 6.3" to 7.7" and averaged 6.8".

Invertebrates identified in order of abundance included Diptera, Plecoptera and Nematodes.

No known sport fishery exists.

Name of Stream: Delta River Tributary to: Tanana River
River System: Tanana
Location: Originates at Tangle Lakes and flows 80 miles to the north where it joins the Tanana at Big Delta.
Position: 64° 09' N 145° 51' W
Length (mi): 80 Width (ft): 50 to 10,560
Water Chemistry and Flow Data:
Date: 7/26/74
Temp (°F): 55 (taken three miles below Wildhorse Creek)

Remarks:

The Delta River heads in the Tangle Lakes system and flows to the north a distance of 80 miles where it joins the Tanana River at Big Delta.

A sport fishery exists only in the upper section from Tangle Lakes to Eureka Creek. Providing excellent grayling fishing, this is a popular float trip from Tangle Lakes to the Richardson Highway (Mile 212), a distance of approximately 35 miles. All but the lower 7 miles of the trip are clear water, with glacial water entering at Eureka Creek.

The stream portion to Eureka Creek is mostly swift flowing through mountainous terrain with numerous rock and gravel riffle areas. A series of falls and rapids exists about 2 miles below the lake system. Pools up to 8' deep are more frequent in the 7 miles below the falls. The lower 3 miles above Eureka Creek are straight, slow moving and sand bottomed.

In 1973, 615 grayling were captured by sport fish gear, tagged and released in the area of the falls. Of the total 279 were tagged above the falls and 336 below. Grayling above the falls averaged 11.9" while those below the falls averaged 11.0".

Angler tag returns and follow-up sampling conducted the following year indicated no upstream movement from below the falls, although some downstream movement was noted.

A boat mounted shocker was utilized in July, 1974, to sample the portion of river from Wildhorse Creek to Eureka Creek. Fish captured included 355 grayling and 144 round whitefish. Length range for the grayling was 4.3"-15.8" with an average of 11.3". The round whitefish had a length range of 7.1"-16.0" and an average of 11.9".

Grayling in the three predominant Age Classes III, IV and V had average lengths of 9.4", 11.5" and 12.7". The oldest grayling aged were VII, with three fish in the sample averaging 15.2".

No fish population information is available for the glacial portion of the Delta River from Eureka Creek to the mouth. However, the lower half-mile of the Delta River at Big Delta is heavily utilized by fall spawning chum salmon. It is in fact, the largest fall chum salmon spawning area in the upper Tanana drainage. Surveys indicated that an estimated 3,650 salmon in 1972 and 10,262 salmon in 1973 utilized the area.

Subsistence permits (40-50 a year) for the taking of carcasses for dog food are issued.

Proposed legislation has been submitted that would identify the area as critical habitat.

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